

more than 30 miles—from 3 miles north of Murphysboro to Dale, in Hamilton County. Almost all the way along the track it was destructive. In a few places the funnel cloud lifted only to lower again with increased violence. The greatest loss of life and property was at Bush, Ill., so I made this my chief place of investigation. I actually followed the track of the storm from De Soto to 1 mile beyond Bush, a distance of about 7 miles.

The storm struck Murphysboro at 6 p. m., Sunday, April 21, and it struck Bush at 6.15 p. m., thus covering 14 miles in about 15 minutes. The evidences on this point were gathered from clocks that were stopped at this hour and from several people who were just out of the danger zone and noticed the time by their watches. The destructive part of the storm did not average more than one-fourth of a mile in width, but because of shifting somewhat it was in some places wider and in others narrower.

Fully 90 per cent of the trees blown over lay to the northeast, but there were places where they lay to the southeast. In one place, where the track was the narrowest, the northeast and southeast trees had their tops touching. On the south side of the track the trees were almost invariably thrown east or northeast, while on the north edge many houses and quite a number of trees were thrown southeast.

The cloud was described by many eyewitnesses, and they were nearly a unit in saying it looked like a heavy, dark, whirling column of smoke, rising from a huge locomotive. The dark and heavy surrounding clouds were noted by many observers. Several persons who stood just outside the danger zone watched the funnel-shaped pendant for miles, and they assert that it seemed to gather at one place and then to scatter somewhat and gather again, and all noted a spiral-like motion of débris within the funnel. The funnel form was observed almost exclusively by persons just outside the zone of violent winds.

There were very large hailstones in the early stage of the violent part of the storm, being often as large as hen's eggs or larger. One person stated that 30 of these hailstones filled a gallon bucket, while about 40 hen's eggs are necessary to fill it. There was not a great deal of rain at the time of the storm and what did occur fell in a few minutes, but it was very heavy for the short time that it rained.

Most of those who observed the funnel-shaped pendant also noted the accompanying roaring noise, yet but few could think of any noise with which to compare it. Some compared it to the muffled roar of an onrushing train, while others said that they had never before heard any other noise just like it.

All dwellings in the town of Bush, with one or two exceptions, belong to the Western Coal & Mining Co., and as a rule they were not securely built. Most of them rested on wooden block foundations and were open underneath. So far as I could observe no storm sheathing was used; and as a result only 25 of the 148 dwellings were uninjured, and these were outside the path of the storm. Twenty-two houses were completely destroyed, 63 partially so, while 43 were slightly damaged. In most cases patches of roof were torn off or the houses were moved off their foundation, otherwise not being seriously injured. The company estimates its loss at not less than \$100,000 and the loss to the occupants of the houses at \$25,000. The railroad roundhouse was destroyed; the section foreman's house was a complete wreck; and cars were damaged, entailing a loss of not less than \$25,000 additional, making a total loss of

\$150,000, based upon the estimate of two officers of the coal company. The loss to farm property between Murphysboro and Bush, including houses, barns, and other buildings, stock, and fencing, amounts to \$50,000. About 25 farmers sustained severe losses, while minor losses occurred on other farms. In some cases both house and barn were destroyed, while in others only the house or the barn was seriously damaged.

The death list totals 9, while 75 were injured.

A second tornado occurred at Willisville, 26 miles north of Murphysboro, on the same day, resulting in the death of three persons, and a third storm of like character occurred 6 miles north of Murphysboro the same evening. No details of these can be given.

TORNADO NEAR CARBONDALE, ILL.

By Prof. F. H. COLYER, Cooperative Observer, Carbondale, Ill.

So far as I can find out the storm began about 4 miles west of Carbondale and extended about 28 miles almost due east into Williamson County. It was most destructive in and near Carbondale. It has been impossible for me to find out just how far east the storm extended as a destructive wind.

The storm occurred in Carbondale at 1.45 p. m., Friday, April 26. The exact time it occurred at other places along the line I can not find out, but here in Carbondale we had over 700 students in the normal school and many of us looked at our watches and at the clocks, so we knew the exact time.

The general direction of the whole storm was almost due east, but winds both from northwest and southwest met along a narrow belt, where the storm was most destructive. The evidences of these lateral winds from the northwest and southwest are very clear. In the first place all buildings and trees thrown down on the north side of the line of meeting of these winds are lying to the southeast, while all buildings and trees on the south side of this line are thrown to the northeast. In the second place, I watched the clouds, and there evidently were two sets of clouds that met along an east and west line. The meeting of these was seen by a number of persons.

The width of the destructive area varies considerably owing to the degrees of violence of the lateral winds. As a rule the most destructive track was not over 400 or 500 feet wide, but barns were blown down over a much wider area; but these were destroyed by the force of the lateral winds, which came in with great violence.

For an hour or so previous to the storm a mass of deep black clouds lay to the north. A short time before the storm a heavy mass of clouds rose in the west and southwest from which came quick, short, and deep thunder. Directly in front of these last-named cloud masses there quickly developed what appeared to be a severe thunder squall, with clouds moving rapidly from the northwest and southwest. At their meeting the clouds appeared to roll and boil, and after a few quick but deep peals of thunder the storm struck us. It grew so dark, and flying obstacles so obscured everything that nothing more could be distinctly seen till the worst of the storm was over. I looked for the funnel cloud, but could see none.

Almost at the same instant that the furious wind struck us very large hailstones fell, but the hail lasted only a short time, giving place to rain. It rained hard for a short time only. For the 24 hours previous to the violent storm we had 3 inches of rainfall from a series of thunderstorms.

My thermograph, which was within one block of the storm center, showed a rapid drop in temperature—from 72° to 58.°5 at the time the storm raged most violently. The relative humidity just as abruptly rose from 83 per cent to 90 per cent. The barograph also instantly dropped 0.25 inch, then as quickly rose again to 29.55 inches, or the point indicated before the storm. The barograph showed a rather unstable condition for the 24 hours prior to the storm.

Several persons, whose judgment and general intelligence are quite dependable, state that they heard constant reports resembling the cracking of a whip, and in some instances as loud as pistol shots, which seemed to

be electrical discharges between tree tops and buildings on the one hand and the clouds or air above on the other. These phenomena did not occur in the direct storm track, but a little to one side. The only reports I have are from the north side of the storm. Later these same reports were attested in the storm center. A roaring noise accompanied the storm particularly when it grew so dark.

Sixteen barns and two houses were entirely destroyed and five houses were seriously damaged. In addition the loss on outbuildings, fences, etc., would make the total loss not less than \$15,000.

Only one person was killed, Mrs. Weller, but three others had serious cuts and bruises.